Typification of *Pinus apulcensis* Lindley (Pinaceae), a Misinterpreted Name for a Latin American Pine

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ABSTRACT. The Mexican taxon *Pinus apulcensis* Lindley is lectotypified with an ovuliferous cone found among carpological material in the herbarium of the Natural History Museum in Vienna (W), which was sent to Endlicher by Lindley. This cone confirms treatments of that name in publications on Mexican pines up to 1945–1948, when Martínez interpreted it in a different sense, using a specimen he had received from the putative type locality. The resulting confusion has been corrected, and a revised synonymy of Lindley's taxon is presented.

During work being carried out to complete the monographic study of pines for *Flora Neotropica* started by Brian T. Styles, a problem was encountered regarding the current interpretation of one of John Lindley's species from Mexico, *Pinus apulcensis*. This interpretation, commonly accepted since Martínez (1945, 1948), and followed by Stead & Styles (1984) in their revision of the "*pseudostrobus*" group, was due to the lack of a type specimen, and was based on what may be described as the topotype method: the assumption that whatever pine grows today at the type locality must be Lindley's taxon.

Lindley (1839) published two new species of pine based on collections made by C. T. Hartweg in Mexico in 1838: *Pinus pseudostrobus* from Angangueo ("Anganguco," Michoacán) and *P. apulcensis* from "ravines near Apulco" (Hidalgo). (The confusion of Apulco with Acapulco seems to have originated with Endlicher (1847: 154).) The original descriptions of both are concise. Apart from short leaves and glaucous shoots, *P. apulcensis* is said to differ from *P. pseudostrobus* mainly in its cones, "covered closely with pyramidal elevations, which are sometimes prolonged and contracted in the middle, especially those near the points of the cones."

Lindley's herbarium is largely at CGE; a few types are also at BM and K (Stafleu & Cowan, 1981). A catalog of conifers (Dümmer, 1913) lists what was in the Lindley herbarium (CGE) early in the twentieth century. Neither of the two taxa with which we are concerned here is mentioned in that catalog. Searches for original material of *Pinus apulcensis* in the above-mentioned herbaria were unsuccessful (Stead & Styles, 1984).

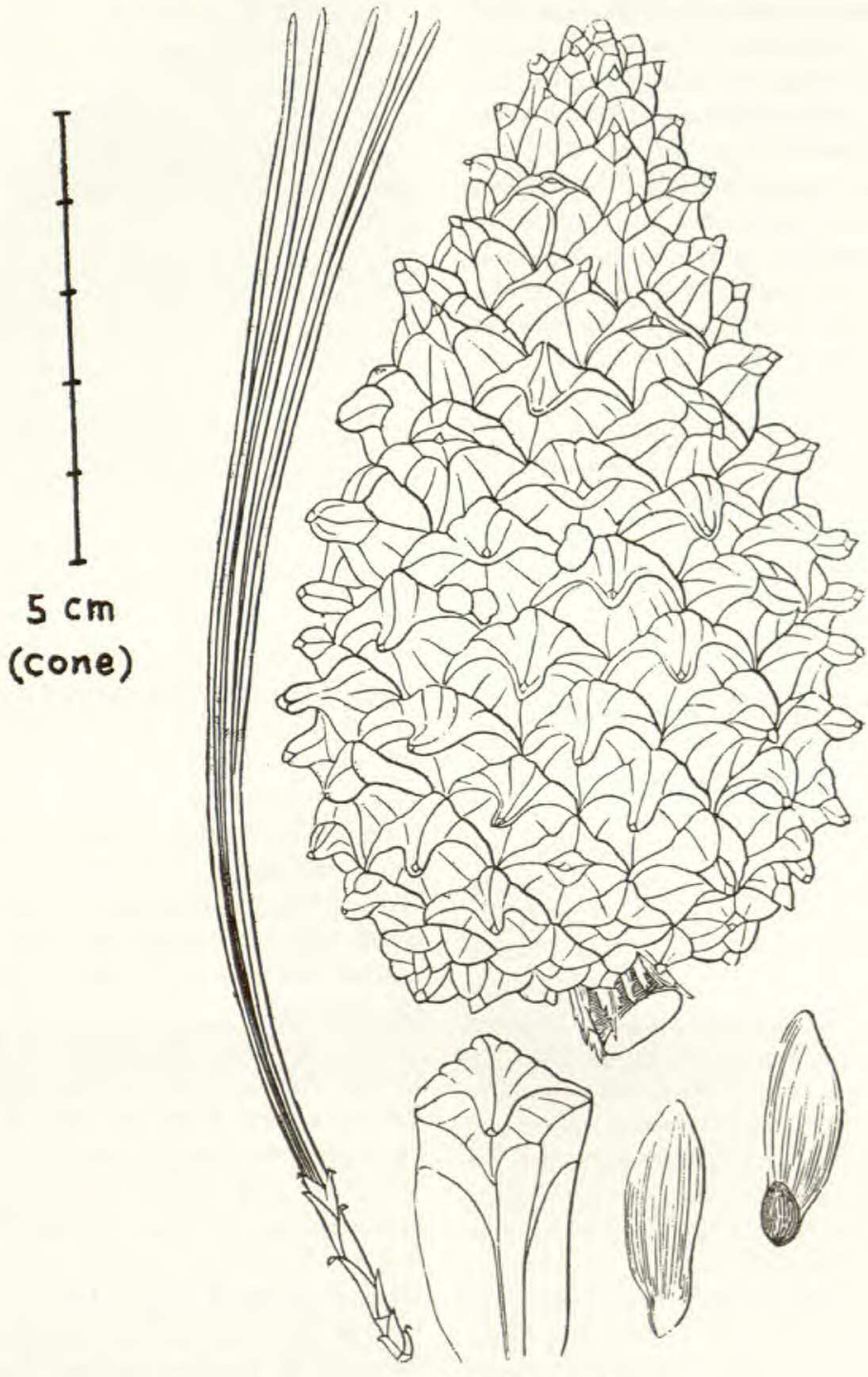
Loudon (1842: 1014–1015) translated Lindley's diagnosis and repeated his English description of *Pinus apulcensis* but stressed even more the "backs of the scales. . .sometimes prolonged into a hook, particularly those nearest the base and the point." He stated that the species was introduced in 1839, "by cones sent home by Hartweg, from which many plants have been raised." And finally, he presented figures 1899 and 1900, "from specimens sent home by Hartweg." Figure 1899 is a natural-size (12 cm long) line drawing of a closed (green?) cone clearly showing what is meant by "prolonged and contracted pyramidal elevations" (Lindley, 1839) and "scales prolonged into a hook" (Loudon, 1842). There can be little doubt that this drawing represents both Hartweg's original collection and Lindley's *P. apulcensis* (Fig. 1).

Shaw (1909) reduced *Pinus apulcensis* Lindley to *P. pseudostrobus* var. *apulcensis*, citing the basionym, Loudon's (1842) figure 1899, Endlicher (1847: 153), and three Mexican collections: *Nelson 985* (US) and *Nelson 2539* (US), both from Oaxaca, and *Pringle 8788* (MEXU, US) from Mexico, as his references. In his plate 12, figures 8, 7, and 6 represent cones of these collections respectively. Like Lindley and Loudon, Shaw emphasized the "peculiar development of the apophyses of the cone, which may attain remarkable prominence." These three collections present considerable variation in development of the apophysis, with *Nelson 2539* closely resembling figure 1899 in Loudon (1842), and *Nelson 985* attaining much longer apophysal elongations and very strongly developed umbos. The present study, based on many more collections, demonstrates that *Nelson 2539* and *Nelson 985* represent the two extremes of a cline in these characters. *Pringle 8788* has strongly developed umbos, but the apophyses of the scales are flat and the

1014 ARBORETUM ET FRUTICETUM BRITANNICUM.

† 48. *P.* APULCE'NSIS *Lindl.* The Apulco Pine.

Identification. Lindl. in Bot. Reg. M. Chron., 1839, No. 100.
Synonyme. *P.* acapulcénsis *G. Don* in *Sweet's Hort. Brit.* ed. 3. p. 769.
Engravings. Our *figs.* 1899, 1900. from specimens sent home by Hartweg.



1899. *P.* apulcénsis.

Figure 1. Illustration of *Pinus apulcensis* Lindley (Fig. 1899) in Loudon's *An Encyclopaedia of Trees and Shrubs; Being the Arboretum et Fruticetum Abridged* (1842); drawn "from specimens sent home by Hartweg."

scales rather thin, which places it outside this cline.

Martínez (1945: 192; see also 1948: 199) refuted Shaw's inclusion of the two Nelson cones, in the belief that the specimens from Oaxaca were not conspecific with those from Apulco: "The specimens from Apulco and surrounding areas lack the characteristic elongations seen in specimens found further south, that is, in Veracruz and Oaxaca" [translated from Spanish]. He observed that Lindley

did not mention these elongations ("prolongaciones," meaning the elongated apophyses) but only "a recurved tip," which sounds like an attempt to bend Lindley's description into shape with what Martínez saw from Apulco. His subsequent "new" combination *Pinus pseudostrobus* Lindley var. *apulcensis* Martínez is superfluous because it repeats Shaw (1909) by including Lindley's type, the identity of which was totally unknown to Martínez. The specimens he referred to (e.g., *Martínez 3434* from Apulco, Hidalgo "var. nov." MEXU; Martínez, 1948: 201, f. 162) indeed lack any pronounced elongation of apophyses and/or umbos. However, they do not represent Lindley's species, but Martínez's interpretation of it, based on the cited locality. Collected around 1939, almost exactly a century after Hartweg made his collections, they are not necessarily from the same location. North of the city of Tulancingo there are two localities with the name Apulco, one at the railwayhead and another ca. 4 km further down a road. To the east of these are mountains (Cerro Viego) and streams (canyons) with pine forests. This constitutes a large area, and it is impossible to know exactly where Hartweg made his collection.

Given the depletion of pine forests in many parts of Mexico in the last 100 years, it may well be that the trees Hartweg saw and collected are no longer there.

For the collections from Oaxaca that Shaw had cited under *Pinus pseudostrobus* var. *apulcensis* (*Nelson 985* and *Nelson 2359*), Martínez (1945: 195; see also 1948: 202) proposed a new combination, *P. pseudostrobus* var. *oaxacana*, citing in synonymy *P. pseudostrobus* var. *apulcensis* (Lindley) Shaw. This was an error: he clearly meant to exclude Lindley's type (Mirov, 1958) and to describe a new variety based on the two Nelson collections. Further, the name was not validly published because he failed to provide a Latin diagnosis. Mirov (1958), referring to the specimens cited by Shaw (1909) and the description given by Martínez (1945), and excluding *P. apulcensis* Lindley, described it as a new species: *P. oaxacana* Mirov. Harrison (1965) then validated Martínez's earlier combination under *P. pseudostrobus* at the rank of variety.

Martínez, in the absence of Lindley's type and with no easy access to European herbaria or nineteenth-century botanical literature (he studied these pines during the Second World War), relied on the topotype method to establish the identity of *Pinus apulcensis* Lindley. Understandable as this may be in the case of Martínez, given the circumstances under which he worked, it is remarkable that later authors (Loock, 1950; Mirov, 1958; Harrison, 1965; Stead, 1983; Stead & Styles, 1984) simply accepted his judgment and never pursued the identity of Lindley's name by typification.

Stead (1983) undertook a numerical study of variation in which one of his collecting sites (No. 14) was the putative type locality of *Pinus apulcensis* Lindley at Apulco, Hidalgo. In his Principal Component Analysis (PCA), the Apulco material (from 25 trees) groups with sites 13 (*P. pseudostrobus* var. *estevezii* Martínez) and 15 (*P. pseudostrobus* var. *coatepecensis* Martínez) on character states such as "increasing cone size, needle width and stomatal lines," but without any clear discontinuity. Cone size also increased for site 8 (representing *P. pseudostrobus* var. *oaxacana* (Mirov) Harrison), but no other characters, including its "very distinctive cones" would separate out this taxon.

The conclusions outlined in Stead (1983) were adopted by Stead & Styles (1984), who identified the material from sites 13–15 as *Pinus pseudostrobus* subsp. *apulcensis* (Lindley) Stead. The two varieties of Martínez (from sites 13 and 15) were cited as synonyms, as well as *P. pseudostrobus* var. *apulcensis* "sensu Shaw pro parte" (which, as can be understood from the synonymy under the previous taxon treated in their revision, means as to type, not to specimens cited). The type, however, was cited as "Apulco, *Hartweg s.n.* (not seen)." (Lindley (1839) did not indicate any lack of a collection number and only mentioned that it was "found by Mr. Hartweg").

It is, of course, the identity of *Pinus apulcensis* Lindley that needs to be established before adopting this epithet. From the above it is obvious that an ovuliferous cone is needed; there is general agreement that foliage characters within *Pinus pseudostrobus* s.l. show considerable overlap and that leaves alone are inadequate for certain determination (Stead & Styles, 1984; Perry, 1991; Carvajal & McVaugh, 1992). Lindley, when he was Secretary of the Horticultural Society of London, distributed material collected by Hartweg to various botanists in Europe, among whom were Parlatore in Florence and Endlicher in Vienna. On a recent visit to Vienna (W), a number of conifer cones of Hartweg's gatherings were found. Among them are two cones of a Mexican pine with Lindley's labels: "*P. apulcensis* Lindley" and a vial with seeds and scales. The cones are 9.5 × 6 cm (closed) and 10 × 8 cm (open) and strongly resemble figure 1899 in Loudon (1842). They are original material and

Figure 2. Closed ovuliferous cone of *Pinus apulcensis* Lindley, with a label written by John Lindley; it is part of the lectotype in the carpological collection of the Natural History Museum in Vienna (W).

are here designated as the lectotype of *Pinus apulcensis* Lindley (Fig. 2).

The synonymy given here pertains only to *Pinus apulcensis* Lindley; no full synonymy is given for *P. pseudostrobus* Lindley.

Pinus pseudostrobus Lindley var. **apulcensis** (Lindley) Shaw, Publ. Arnold Arbor. 1: 19, t. 12, f. 6–8. 1909. *Pinus apulcensis* Lindley, Edwards's Bot. Reg. 25: 63. Aug. 1839 [& Allg. Gartenzeitung 7: 325. 1839]. *Pinus pseudostrobus* subsp. *apulcensis* (Lindley) Stead, Bot. J. Linn. Soc. 89: 269. 1984. TYPE: Mexico. Hidalgo: ravines near Apulco, *C. T. Hartweg s.n.*, ex Hort. Soc. London, 2 ovuliferous cones with labels: *P. apulcensis* Lindley in Lindley's handwriting, vial with seeds and scales (lectotype, here designated, W).

Pinus pseudostrobus var. *oaxacana* Martínez, Anales Inst. Biol. Univ. Nac. México 16: 1945, f. 164–168. 1945, nom. inval.

Pinus oaxacana Mirov, Madroño 14: 145. 1958. *Pinus pseudostrobus* var. *oaxacana* (Mirov) S. G. Harrison, Taxon 14: 247. 1965. TYPE: Mexico. Oaxaca: La Parada, *E. W. Nelson 985* (holotype, US).

Pinus pseudostrobus Lindley is a widely distributed species with polymorphic ovuliferous cones, occurring from Sinaloa and Nuevo León in Mexico to Honduras (Stead & Styles, 1984). *Pinus pseudostrobus* var. *apulcensis* (Lindley) Shaw is a cone variant distinguished by more or less clinal characters becoming more abundant in southern Mexico. It is usually sympatric with *P. pseudostrobus* Lindley var. *pseudostrobus* but apparently absent from large parts of the range of the species (Carvajal & McVaugh, 1992). Acceptance at any other rank than variety therefore seems unwarranted for this taxon. Current use of the epithet *apulcensis* in the sense of Article 57 (formerly 69.4) of the *Code* (Greuter et al., 1994) is only at infraspecific rank. The name *P. oaxacana* is occasionally used, but this taxon, too, is treated in most of the literature, especially forestry literature, at infraspecific rank. There is therefore only a weak case for a proposal either to reject *P. apulcensis* Lindley or to conserve it with a conserved type, and I strongly prefer to correct the errors made before I take up the name in the sense of its type in *Flora Neotropica*.

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